AN

INAUGURAL ESSAY

ON THE

EFFECTS, & MODUS OPERANDI

OF THE

CARBONATES OF LIME, MAGNESIA,

AND POTASH;

IN THE CURE

OF GENERAL & LOCAL DISEASES.

BY JAMES ARCHER, OF MARYLAND.

PHILADELPHIA:

PRINTED FOR THE AUTHOR, BY W. F. M'LAUGHLIN,

NO. 34, NORTH SECOND STREET.

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1804.

AN

INAUGURAL ESSAY

FOR THE DEGREE

OF DOCTOR OF MEDICINE,

SUBMITTED TO THE EXAMINATION

OF THE

REV. JOHN ANDREWS, D. D. PROVOST,

(*PRO TEMPORE.*)

THE

TRUSTEES & MEDICAL FACULTY

OF THE

UNIVERSITY OF PENNSYLVANIA,

ON THE 7TH JUNE, 1804.

TO

JOHN ARCHER, M. B.

ONE OF THE REPRESENTATIVES IN CONGRESS,

FROM THE

STATE OF MARYLAND.

HONOURABLE SIR,

I HAVE dedicated this Inaugural Essay to you from motives of gratitude, as well as duty, for the favours and protection which you have so liberally bestowed on me; and although I am conscious it can add nothing to your fame, or usefulness, it will discover to you the high sense which I entertain of both, and the obligations which I owe to you for your paternal care and instruction through every period of my life.

PERMIT me to unite my prayers with the supplications of hundreds for the prolongation of that life which has been spent in the pursuit of a laborious Profession, with no less honour to yourself than usefulness to others.

I am

Honourable Sir,

With gratitude and esteem,

Your affectionate Son and Pupil,

JAMES ARCHER.

TO

ROBERT HARRIS, A. M.

MEMBER OF THE AMERICAN PHILOSOPHICAL SOCIETY, &c.

WHOSE GENIUS, AND LEARNING

HAVE REFLECTED NO LESS HONOUR ON HIS PROFESSION,

THAN HIS SOUND JUDGMENT,

AND ACTIVE HUMANITY

Have been the means of procuring, FOR HIMSELF,

GREAT RESPECTABILITY OF CHARACTER,

FOR THE AFFLICTED, HEALTH,

Where *art* was able to effect any thing,

AND FORTITUDE,

WHERE ALL HUMAN EFFORTS WERE NUGATORY!

WHOSE PUBLIC VIRTUES

HAVE BEEN AS HONOURABLE TO HIS COUNTRY,

AS HIS PRIVATE LIFE

HAS BEEN WORTHY THE IMITATION OF MANKIND;

THIS ESSAY IS ALSO DEDICATED,

BY HIS VERY RESPECTFUL FRIEND,

AND KINSMAN,

THE AUTHOR.

Mendenhall

With the best Respects

of his friend the

Author

INAUGURAL ESSAY, &c.

THE period when the Carbonates of Lime, Magnesia, and Potash in some form or other, were first used as medicines, is of remote date. They were then confined entirely to those diseases in which an acid was discoverable, either to the taste of the patient, in his eructations, or vomitings; or obvious to the eye of the physician in the evacuations from the bowels. Their indication here was not to remove the general disorder of the system, but to obviate a troublesome and adventitious symptom, with which the general disease then existing, was supposed to have no connection. The patient recovered, but the credit was given perhaps to a diaphoretic, or a blister....At this period of medical science, I cannot help thinking this troublesome symptom was a most fortunate occurrence for the

sufferer, as it led to a speedy and effectual eradication of the disease.

The late discoveries in chemistry have produced improvements in the principles and practical parts of some of the sciences, with which it was formerly thought to have had no connection. The discovery of the gases, and their effects on animate and inanimate matter, has lead not only to a rational knowledge of the causes of diseases, and their prevention; but to this probably, mankind will be indebted for a method of cure extremely consolatory in its effects, which will supersede the febrifuge boluses, powders, draughts, mixtures, solutions, &c. &c. which now fill the diurnal prescriptions of our physicians, and the chambers of their patients. The practice of medicine will be simplified, and this disgusting and inefficient farrago will only mark the ignorance of the times in which they were exhibited.

Before I proceed to the more immediate object of this essay, that I may be the better understood, it will be proper to say some-

thing on questions of a preliminary nature. In doing this I will take a concise view of the nature of the remote cause, and the mode of its operation in the production of those diseases, for the removal of which, the carbonates of lime, &c. will be recommended.

All medical writers on this subject have agreed, that during the decomposition of animal and vegetable matter by putrefaction, an effluvium is generated and disengaged, which when received into the system under certain circumstances, they have considered as the remote cause of bilious remitting, intermitting and other fevers; but what the nature and operation of this effluvium was, has afforded matter for much speculation and controversy. Owing to their imperfect knowledge of the nature of those gases which are the results of putrefaction, no advantage can be derived from the conjectures of those who have written previously to the late revolutions in chemistry.

Putrefaction is a chemical process, to the production of which, heat, pure air, and mois-

ture are essential; and by which an organic body is resolved into its elementary atoms, these results and their proportions are different according to the nature of the substances which are the subjects of it. Animals, and vegetables, have not always the same elementary parts, hence the gases produced by the putrefaction of these bodies must often be different. *Azote, carbon, hydrogene, and phosphorus are chiefly the constituent parts of animals....During the disorganization of these bodies, the arrangements of their radicals are destroyed, and form new combinations. The oxigene of the water, and of the air, unite with the septon and part of the carbon producing septic and carbonic acids, while the hydrogene of the water and of the body dissolves the phosphorus and remainder of the carbon, generating phosphorated hydrogene, and carbonated hydrogene gases. These are not invariably the products of putrefaction,

* I will hereafter prefer the term *Septon* introduced by Dr. Mitchell, to that of *Azote* or *Nitrogene*, expressive of the same thing, by the French chemists; consequently all its combinations with caloric or the acidifying principle will be named after the manner of that ingenious Author.

for sometimes the hydrogene and septon unite, forming ammoniac, depending generally upon the presence of a high degree of temperature, which changes the affinities of these elements: at others, the septon does not become sufficiently oxygenated to constitute an acid, but forms the gaseous oxyd of septon.

The only difference which is supposed to obtain in a chemical point of view, between the animal and vegetable kingdoms, is the quantity of septon which the former contains more than the latter. Indeed the greater part of vegetables contain none of it.

Marsh miasma which is universally acknowledged to be the chief cause of summer and autumnal diseases, is never the result of pure and unmixed vegetable putrefaction, for the sources generating this pestilential effluvium, besides vegetables contain also myriads of animals, which become subject likewise to the established laws of the chemical affinities.

Doctor Mitchell of New York, whose knowledge of chemistry gives great weight to his opinions in this science, has by his inquiries into the nature of pestilential fluids, thrown much light on this subject. He has shewn by a multiplicity of specious arguments, that none of the products of putrefaction is noxious when applied to, or received into the body, except those which arise from the chemical union of septon with oxygene. I will not repeat what the Doctor has said on this subject, but content myself by referring the reader to his various publications relative to it, inserted in the different volumes of the *Medical Repository*, which I presume are in the hands of every physician in the United States.

It being thus assumed as a principle, that the effluvium produced by the chemical union of oxygene with septon, evolved during the process of putrefaction is the cause of pestilential diseases in all their grades; it remains to be shewn that they may exist sporadically in situations where their sources do not strike

the eye of the observer. From the existence of bilious diseases of a high and alarming grade, in places where none of those sources can be discovered which I have mentioned, it would seem at first view, that the position which I have assumed is incorrect, or at least extremely questionable; but as the subjects of putrefaction and its essentials, viz. heat, air, and moisture, are present in the intestinal tube, those diseases can be, and are produced, without this external source of their remote cause. Fear, intoxication, fatigue, &c. and indeed all those forms of disease which are not supposed to be derived from the reception of oxygenated septon into the stomach and bowels, by deranging the healthy and peculiar action of these viscera, by means of which the ingesta are made to contribute to the nutrition and growth of the animal, render the contents of the bowels as liable to pass through that stage of putrefaction which generates the septic poison, as any external source whatever. Hence the reason why the same remedies which are calculated to disarm it of its hurtful power, are almost as strongly

indicated, and as equally serviceable, in those diseases which are produced by vicissitudes of the weather, external violence, &c. as in those which arise from its reception into the primæ viæ, or its generation there previously to their formation.

The manner in which this remote cause operates in the production of disease, next becomes the subject of consideration.

All the diseases which depend on Miasma for their formation, discover in their first stages, symptoms of an inflammatory diathesis prevailing in the system to an extent proportioned to the concentration of the remote cause, modified by the condition of the body which becomes the subject of its operation. This is evinced by a tense and bounding pulse, acute pain in the head, turgidity of countenance, suffusion of the eyes, &c. which are *universally* acknowledged to be the effects produced by the operation of a known, stimulating power, on the animal body. Hence

the inference, that this pestilential effluvium is a stimulus.

Such are the wonderful construction of our bodies, and the connections established between their different parts that any deleterious cause operating locally, communicates the effects which it there produces, to every part of it, with a rapidity, and a violence, bearing a proportion to those circumstances which favour, or retard its operation. There are parts of our bodies which possess this vibratility, and intimacy of union, in a much higher degree than others. The intestinal canal through its whole extent, possesses these properties in so remarkable and superior a degree, that causes producing diseased action operating here, soon throw the whole system into disorder. It is with me extremely questionable, whether the noxious effluvium which is the cause of most of our summer and autumnal diseases, ever produces any bad effects but through the medium of the primæ viæ. The facility of it's reception into these passages; the daily presence in

them of those substances, which under certain circumstances are the sources of its generation; the comparative unsusceptibility of the pulmonary system, and of the external surface of the body to receive impressions from a noxious cause, the former possessing the power of separating and discharging noxious, from innoxious airs, the latter sufficiently protected by an inorganic cuticle, together with the good effects of remedies hereafter to be mentioned, which can be beneficial in no other way than by a local operation, would seem to favour this opinion.

The pestilential gas being received into the stomach and bowels from without, or generated within, first begins it's destructive effects, by exciting morbid action in the blood-vessels of the parts to which it is applied, and such is the unity of this system of vessels, that the diseased excitement soon runs through the whole, producing affections of the head, lungs, stomach, bowels, &c. according to the previous debility of these parts, inviting higher degrees of local excitement,

or the prevailing constitution of the atmosphere.

But if fever be symptomatic of a primary local affection, pain it may be objected, ought universally to precede it's formation; nay, more, that this pain ought to be the nosome~~me~~ter. In order to examine the force of this objection, let us extend our inquiries to the operation of some of those irritants, whose application often proves the cause of disease, or by whose operation, morbid excitement is destroyed, and healthy action restored to its pristine vigor.

Does an immoderate dose of opium when taken into the stomach, or injected into the *rectum* produce fever? So does *marsh effluvium*, and both without producing pain as their primary effect.

Do the injection into the *rectum*, of an infusion or the smoke of tobacco and the application of cataplasms of this noxious and deleterious drug to the stomach, produce the

retrogade motion of these organs, as is discoverable by the supervention of a distressing, and alarming nausea and vomiting? So does *marsh effluvium*, and both equally unattended by pain in the parts to which they are applied. It may be said that the pain in the intestines accompanying dysentery, which is universally acknowledged to arise from the same causes which produce pestilential diseases, is an unequivocal evidence of the locality in operation of the cause which produces it; but here the pain arises from the generality of morbid excitement antecedently produced by the operation of it's cause, upon the comparatively insensible sanguiferous canals of the primæ viæ, and is no more dependent upon the primary effects of pestilential gas for its cause, than the pain in the head, back, and other parts of the body, which occur in bilious fevers.

Again.....Does the exhibition of a few grains of *podophyllum peltatum* for the evacuation of the contents of the primæ viæ, or of some of our most powerful and useful diu-

retics, for the purpose of discharging effusions of water from the cavities of the thorax, and abdomen, excite sensation in those parts to which we know they can only be applied? Are the vigorous and healthy pulsations of the arteries produced by the reception of *cinchona*, and other tonics into the stomach, necessarily preceded by sensation in this part? By no means; but it would be paying a poor compliment to the judgment of the reader, to multiply proofs evincive of the soundness of this doctrine, for no person who knows any thing of the principles of medical philosophy will assert, that sensation is always in proportion to the force of impression.

We have said that the blood-vessels of the intestines are the parts on which *marsh miasma* primarily operates, then the fact, that this local morbid excitement is unattended with pain, may I think be very rationally accounted for, from the circumstance of the objects of this increased action possessing but little sensibility, for physiologists inform us, that the irritability of the blood-vessels

predominates greatly over their sensibility. This much we certainly know, that diseased, and increased action of the blood-vessels, is not necessarily followed by pain, for how often do we find the former present in an alarming degree, without the latter discovering itself in any part of the body.

Having ascertained that the matter of pestilence is chiefly of animal origin, generated by putrefaction; that it is seldom, if ever, produced by pure and unmixed vegetable putrefaction; that it is the chemical union of two of the elementary parts of all animal, and some vegetable bodies, resolved by putrefaction on the surface of the earth, or shut up in the bowels; that it may, or may not, be possessed of the properties of an acid; that in the production of diseases it operates first locally upon the sites of its application, occasioning all the variety of symptoms of every grade and denomination, by a no less wonderful, than well established law of the animal economy; that the parts to which it is applied with these effects, are not

the external surface of the body, nor the lungs, but the primæ viæ through their whole extent; that the morbid consequences which follow it's effectual application, arise from a sympathy of union which subsists between these parts and every other part of the system: I will proceed to the practical consideration of the subject.

From the theory which has been inculcated in the preceding pages, the carbonates of lime, magnesia, and potash, are calculated to fulfil two important indications in the cure of diseases.

1. The destruction of the deleterious quality of the septic acid existing in the primæ viæ, and producing diseases as is above explained; and,

2. The prevention of it's evolution, by putting a stop to that process going on in the contents of these passages, which gives rise to it.

The removal of the remote cause of the disease which now becomes the subject of our attention, where it can be ascertained, and is practicable, is in general the first indication of cure, which strikes the judgment of every practitioner of medicine. While this continues to exist with all it's pernicious and unsalubrious properties, continually reproducing those symptoms which the exertions of the physician have mitigated or wholly overcome; all that can be expected is the preservation of life, until the system becomes habituated to the operation of the stimulating cause, when it becomes no longer capable of exciting impressions or actions, and the body either of itself, or by the exhibition of those medicines possessing a tonic power, returns to its accustomed health. The inflammation of the eye produced by the introduction into it of an extraneous body, will be much more speedily cured, and with less danger to the organ, where the removal of this remote cause becomes the first object of the surgeon's attention. Previously to this, all that

can be expected from blood-letting and the usual means of obviating the diseased actions which are going on, is barely a mitigation of the symptoms. In the mean while the eye becomes accustomed to the unnatural stimulus, which loses in proportion its capacity of exciting disorder, and the health of the part is restored. Hence many medicines have had the credit of curing diseases, when in reality they did no more than preserve from the disorganizing effects of morbid action, until the irritating cause could no longer produce any impression. Without this accommodating power of the animal œconomy, those general remedies which have for their object the removal of effects only, such as venesection, &c. would, while the primary cause remained in its original virulence, never cure a disease; they might indeed keep the lamp of life burning a little longer, but it would sooner or later be extinguished. The truth of this is proven by the effects of what is called a seasoning in the inhabitants of the middle latitudes, going into tropical countries. The noxious effluvium which is so abundant-

ly generated in these climes, soon affects them; but by remaining there a longer or shorter time, according to their several idiosyncrasies, they escape these pernicious effects of its operation, in an equal degree with the natives of the country. On this principle it can be explained how some persons have recovered from diseases of great violence, without the use of medicine; and every physician of candour will acknowledge, that frequently in the advanced stages of Typhus fever, the medicines prescribed have no other effect, than to keep the wheels of life in motion, until its cause ceased to produce impression, from the above accommodating power of the system.

To shew the reader that these opinions are not wholly speculative, I will subjoin the following cases; the most of which are selected from the practice of Dr. John Archer, senior

CASE I.

Mrs. S. M'C—— was attacked in the month of June 1800, with the symptoms of

yellow fever, which was then commencing its ravages in the city of Baltimore. Her disease began with chilliness, succeeded by severe pains in the head, back, &c. great prostration of strength, and vomiting, by which was discharged a chocolate coloured liquid, and her stools had the same appearance, emitting the most nauseous and offensive smell. Her pulse beat 100 in a minute, and was tense. She took two drachms of chalk, in fine powder, every two hours. After she had taken a few doses of this medicine, a cathartic was given, in order to carry it through the bowels. The following day she was not better, although the cathartic operated freely. The stools were extremely offensive. The chalk was ordered to be continued regularly, and injections of it prepared by mixing an ounce of it in a pint of water, were recommended to be thrown into the rectum every four hours, and oftener, if she did not retain these for this length of time. The next day she was considerably better, pulse not more than 80, without tension. The sickness which had been distressing heretofore, had

left her. The pains in her head, &c. had nearly gone. The confinement appeared to be now from debility alone. The first injection she discharged almost immediately after it was administered; the second remained longer, and after the exhibition of three or four, she retained them for four or five hours, so that it became necessary to add to them some stimulating ingredient. The injections soon destroyed the fetor of the stools: she had a short convalescence, in which she took an infusion, or decoction of Peruvian Bark.

In this case there were other medicines exhibited at the instance of two medical gentlemen who attended in consultation, but to which I am sure no thinking person will attribute her recovery. They were nitre and antimonial solution.

CASE II.

The case of Mrs. H.—— which occured in the course of the same year, was so similar to the above, that I will not repeat the par-

ticulars of her disease. She likewise vomited, and purged a chocolate-coloured fluid, and was cured in a short time by a similar method of treatment.

CASE III.

Mr. R—— of Spesutiæ* during the summer of 1802, had been for some time labouring under the disease which is common on this Island. Upon visiting him, which was some days after being seized, his extremities were found cold, his pulse scarcely to be felt, and very frequent, with cold perspiration. He had vomiting and purging to a considerable degree; the discharges exhibiting an appearance very like those evacuated in the two preceding cases. The case was considered as hopeless; however a liberal use of the chalk was advised by mouth and injections

* This Island is situated in the Chesapeake Bay, near its source and to the south-east of Havre-de-Grace. It contains about 3000 acres, a considerable part of which is marshy. It is as remarkable for its fertility, as for ingendering every grade of that form of disease denominated Bilious, from the most malignant type, of which the above case is an instance, to that of the mildest intermittent.

into the bowels. In 24 hours he was considerably better. His vomiting ceased, and his discharges by stool, which previously to this had been extremely offensive, lost their disagreeable odour, and were restored to their natural colour. His fever soon left him and there remained nothing but debility to overcome, which was effected by the usual Tonics. It was however thought necessary to give a few doses of chalk every day to prevent the contents of his bowels, in their weak state, from disordering the system.

CASE IV.

Mrs. L.—— of the city of Washington, during the winter of 1802, 3, was attacked a day or two previously to visitation, with high fever, accompanied with a distressing and acute pain in the head, succeeded by delirium; she soon became insensible, and comatose, and wholly unable to swallow any thing. Her pulse was full and very tense Fearing that congestion, and the consequent disorganization of some part essential to life would

be the speedy result of such a high morbid excitement, the first object was to obviate this danger; for which purpose she was bled freely. This produced no alteration of the symptoms. Conceiving that the cause of all the mischief lay in the primæ viæ, and that it did not materially differ in its nature from that of the preceding cases; an ounce of finely powdered chalk was directed to be mixed in a pint of thin gruel, and thrown into the rectum every three or four hours, provided the injections did not remain so long; but if they were retained eight hours, a stimulating injection was to be given for the purpose of procuring a discharge, and making room for the administration of more chalk. These directions were strictly adhered to. The fullness and tension of the pulse were still indicative of much danger. She was bled a second time; she felt the prick of the lancet to which she was quite insensible in the former bleeding; but the comatose symptoms were as before. The Injections were ordered to be continued, without the administration of any

other medicine. She soon recovered her senses, and in a few days was restored to her former health.

CASE V.

A young woman was seized in the city of Baltimore with the usual symptoms of yellow fever, in the summer of 1800, and took a passage in a vessel then going to Rock-run, a few miles above the mouth of the Susquehanna. Her arrival at this place put the whole neighbourhood in alarm, and a tanner's shop was converted into a chamber for her accommodation. When called to visit her, which was the 3d. day of her disease, she was discharging black matter from the stomach and bowels. On her arms, legs, and thighs, were many livid spots. The case was too far advanced to be benefited by the evacuating plan. In this hopeless condition she was treated with chalk, taken in very large quantities as above. Jalap was occasionally given to conduct it through the bowels, and meet the cause of the disease wherever it existed.

This patient recovered, although her coffin and winding sheet, had been prepared for her soon after her arrival.

To secure her attendants from the effects of the *effluvium* discharged from every source, they were advised to take a few doses of uncalcined magnesia and chalk every day, and to cover the floor with a coat of lime and ashes half an inch thick; she communicated the disease to no one, but whither in consequence of this advice, is left for others to determine.

CASE VI.

A child of Mr. H—— F—— of Georgetown, had laboured under a profuse diarrhœa for some time, with swelled parotid and salivary glands. She had taken the usual remedies for that disease without relief from an eminent physician of that place. The little patient was much reduced and emaciated. A teaspoonful of prepared chalk was now

advised to be given every three, and a cretaceous glyster every six hours, and all other medicines laid aside, except an occasional anodyne. Under this treatment the swellings of the glands disappeared and the child quickly recovered.

CASE VII.

While attending a meeting of the medical and chirurgical faculty of Maryland, in June 1802, which was then sitting in Baltimore, Doctor Archer, senr. was requested to visit the child of Mr. C—— in consultation with two gentlemen eminent in the profession. The child was a boy about twelve months old. Previously to his first visit, the child had great difficulty of breathing, producing a sound in respiration similar to what is observed in *cynanche trachealis*, with fever, &c. Of these symptoms he was relieved, and apparently recovering; but in 24 hours after appearances of amendment, he was seized with spasms, similar to those which occur in *tetanus*. In this situation nothing could be

swallowed; nay every attempt to perform deglutition, or even touching his lips would instantly bring on the convulsive affection. An *epispastic* had been applied before he saw the child, without relief. It was his opinion that the spasms and other symptoms were occasioned by intestinal irritation, for the removal of which he advised, that cretaceous injections, made by mixing three drachms of prepared chalk with four ounces of gruel, should be administered every three hours. This was acquiesced in, and the direction strictly followed. In two days the spasms ceased, and the child was soon well.

CASE VIII.

In the summer of 1802, Dr. Archer, sen. received a letter from Dr. William Harris of Belle-font in Pennsylvania, requesting his advice in his own case. He complained of pain in the head, indistinct vision, apparently occasioned by numerous objects floating or moving before the eyes, and expressed his fears of an approaching cataract in both.

He advised Dr. Harris to take absorbents and alkalies freely; such as the carbonate of lime, magnesia, and potash, castile-soap, &c. and occasionally calomel and laxatives; for his belief was that the stomach was the seat of his disease, and a predominant acid it's cause, producing disorder in this viscus, and affecting the eye by sympathy. The correctness of this opinion, and the happy effects of the advised remedies, will appear from Dr. Harris's letter, dated 14th Feb. 1803, with which I am favoured.

"Since I received your last letter dated 13th September, ultimo, I have strictly adhered to your prescriptions, and am happy to inform you that I am now quite restored to health. I am also convinced, and perfectly agree with you, that the stomach was the seat of my disease. From the time I began the use of the medicines you recommended, I found myself almost daily recovering. I likewise introduced a seton into the back of my neck. I sometimes took in one day, as much as four drachms of castile-soap. It proved to me the *magnum donum dei.*

" I will now give you a statement of the supposed cause of my complaint. Perhaps no person ever enjoyed better health than I did, until the summer of 1800, when I took a passage in a vessel bound to Hallifax, in Nova Scotia. We laid in as part of our sea stores, some neat's tongues slightly corned, or salted; some of these were used in the beginning of the voyage, and were very good. Thirteen days after we left the port of New York, and shortly before we made land, the wind blew a severe gale, which lasted several hours, during which time we had nothing cooked, and all of us were very hungry. One of the tongues was ordered to be cooked. When brought to the table it was apparently in good order. We each of us ate some before we perceived it's taste or smell, for the bilge water had been tossed so much during the gale, that it occasioned a very disagreeable smell throughout every part of the vessel. When the tongue was closely examined, it was found quite putrid, and of a green colour. All who had eaten of the tongue became sick at the stomach, and vo-

mited. The discharges from my stomach were so extremely acrid, as to excoriate the throat and fauces. This was followed by diarrhoea, and afterwards by dysentery, with bloody stools and violent tenesmus. Almost all who ate of the tongues were affected in like manner, but I do not know the event of them, as we at this time made the port of Hallifax. From this time I was troubled with *cardialgia*, and windy eructations, and sometimes vomited the contents of my stomach, so acid as to set my teeth on edge. Withal I enjoyed good health in every other respect, until my return to this place in October following, when after a good deal of exposure, and fatigue, I was seized with severe pains in my head, and slightly in my stomach, and the organs of vision became affected in the manner before related, which I had every reason to believe would have ended in cataract."

"When I received your last letter, I was almost blind, and about to retire from the practice of medicine, but I thank a superin-

tending Providence who through your instrumentality, has restored me to health and usefulness."

CASE IX.

In the summer of 1803, Mrs. S—— then in the 8th month of pregnancy was attacked with the usual symptoms of a bilious remittent, accompanied with extensive erysipelatous inflammation of the right leg, thigh and hip, which was progressing rapidly; attended with great pain. She had occasional vomiting of green bile. The constant pain, in the abdomen, loins and hips, threatened miscarriage. I first saw her in the exacerbation of the fever, and drew about 10 oz. of blood from the arm. Soon after she took a gentle emetic of ipecacuanha, and during it's operation, took frequent draughts of warm-water with chalk. The cretaceous injections were administered every three or four hours; if retained longer than this, they were made stimulating by the addition of a little muriate of soda.

The inflamed parts which in several places appeared to threaten mortification, were covered with carbonate of lime, mixed with a small portion of wheat flour, and renewed every day. An anodyne was given occasionally to procure relief from pain, and a dose of chalk every two or three hours mixed with a portion of magnesia. Under the use of these remedies her disease soon put on the type of an intermittent. The liberal use of the peruvian bark and absorbents soon restored her to health, and she bore a healthy child at the usual period of gestation.

CASE X.

Miss E—— was advised to take a dose of May-apple*-root, to remove a slight indisposition, supposed to arise from obstructed *catamenia;* by mistake she took a very large dose of the decoction of the fresh root. It quickly produced violent vomiting, by which

* The podophyllum peltatum of Linnæus.

was discharged large quantities of dark green bile, so irritating as to inflame the œsophagus and fauces. She had been costive for some time, and which the May-apple-root did not obviate. She had been near two days in the above condition before I saw her; and had taken all the usual remedies from a physician in the neighbourhood without relief. I advised the carbonates of lime and magnesia to be given freely by mouth, and injected into the bowels. She vomited two or three times afterwards; but the colour and acid qualities of the discharges were altered.....All distressing symptoms vanished.....She was much debilitated, but soon recovered by the use of tonic remedies.

CASE XI.

In the fall of 1800, Mr. P—— T—— was seized with the usual symptoms of fever, attended with severe pain in the region of the stomach, vomiting of green bile, and discharges of the same nature from the bowels. His eyes soon became yellow, succeeded by

an icteritious appearance of the skin on all parts of the body. He was attended by an eminent and skilful physician who mistaking his disease for *icterus*, supposed the pain in the epigastric region, to proceed from a spasm of the biliary ducts, or the passage of a gall-stone through them, attempted the cure by the usual remedies recommended in this disease; but with an increase of all his symptoms. At this time he was visited by Doctor Archer, sen. who had very different views of his disease, supposing it to proceed from the action of a morbid cause in the stomach, and prevailed upon his physician to adopt his views as to the cause and cure. The patient was to all appearances in much danger. All other medicines were now laid aside, and he now took very freely of absorbents, especially the powdered oyster-shells, and chalk by the mouth and by glyster. In a short time the happy consequences of this treatment manifested themselves. On the third day he was able to ride sixteen miles to his own house in a carriage, and in a few more was entirely well.

In the administration of chalk to children, I have observed, that if worms were present in the first passages, they were as frequently discharged dead, under this treatment, as any other whatever. A closer attention to the subject, has convinced me that its anthelmintic powers are considerable. The fixed air which it contains, is very obnoxious to worms; and a discharge of this gas in the primæ viæ, by which they may be inveloped, is easily effected by the administration of a draught of citric, or acetic acid, given soon after the medicine.

I could easily multiply cases in proof of the utility of the carbonates which I have mentioned; but in all, the mode of exhibition was so similar, that prolixity, without usefulness would be the consequence of a farther relation. I have before said, that when the healthy action of the system is exchanged, from whatsoever cause, for one of a morbid kind, the contents of the primæ viæ quickly run into that process which generates an additional fomes of disease.....

Hence there is no disease from which we may not expect to derive some advantage from their exhibition. I have given them with the most evident advantage in cholera, measles, small-pox, &c. &c. and indeed in all the variety of general diseases mentioned by nosologists.

I would beg leave not to be understood as recommending their use, to the exclusion of all other remedies. Nothing is farther from my intentions. Venesection, emetics, cathartics, epispastics, stimulants, tonics, &c. are powerful auxiliaries in the hands of a skillful physician.

Before I dismiss this subject, it will be proper to say something on the use of the carbonates of lime, &c. in affections of a local nature, when applied to the part. Their *modus operandi* being here submitted to our observation, may lead us to explain, the manner in which they produce their good effects when taken internally.

It has been ascertained that acid properties belong to the discharges from some ulcers. In proportion as these degenerate from the character of simple purulent ulcers, the acid nature of their discharge becomes more obvious. Doctor Ewart, of Bath, in England, used the carbonic acid gas with good effect in cancerous affections, applied externally to the ulcer, at the same time excluding every other species of air, by a particular apparatus which he has mentioned. The Doctor seems to doubt, whether it operates by excluding atmospheric air, which is acknowledgedly hurtful, or by some specific properties which it possesses. I have no doubt but the exclusion of oxygene, one of the constituent portions of the atmosphere, which was effectually done in the cases he has mentioned, was one mean from which his patients derived benefit; but from the cases which have been heretofore related; and some to be mentioned presently, it will be rendered certain, at least probable, that the carbonic gas has something more than a negatively good effect.

CASE XII.

Mrs. H—— after lying in, had an abcess formed in her breast, which progressed in the usual way for some time....When matter formed, it was evacuated by the lancet. A few days afterwards, the discharge became offensive, thin, and acrid. The ulcer was spreading rapidly with excessive pain, and beginning *sphacelus*. The common remedies were tried in vain. She was advised to have all the extensive ulceration covered with a coat of chalk, and renewed every 8 or 10 hours. In a very few hours the pain was entirely gone. In 36 or 48 hours the ulcer assumed a healthy aspect, and cicratized in a very short time.

I have found the carbonate of lime very effectual, in destroying the offensive and putrid smell of ulcers of every description; and when the constitution was not in fault, a wholesome pus was generally produced by it's repeated application.

In ulcers where there was too little inflammation, and consequent deficiency of sensibility; or in those generally, in which from the degree of morbidly increased action, mortification was threatened, or actually present, I have applied the carbonate of potash with great advantage. I would prefer it in such cases to the chalk, because by it's stimulating properties, in the former case it excites the necessary degree of inflammation; in the latter it overcomes the diseased action and leaves a healthy inflammation in it's stead, without which no ulcer can heal; at the same time, that it destroys the morbid and offensive nature of the discharge.

CASE XIII.

Mr. W—— E——, in 1769, had a large carbuncle on his back. It was of a purple colour, continued to enlarge, and through the integuments were many perforations, which gave exit to a very fetid discharge. Doctor Archer, sen. made an incision into the tumor. A slough had formed under the *cutis.*

Some blood was discharged from the incision, into which, he put some carbonate of potash, and with a probe forced it into various parts of the slough. This application was repeated daily. The fetor was almost immediately corrected.....the slough soon separated, and the ulcer rapidly healed.

CASE XIV.

W—— M——, in 1794, was afflicted with tumors very similar to the above ; they were so numerous, and extensive, as to occupy his whole back. His treatment was nearly similar : the only additional application was chalk, for both seemed not more than sufficient to correct the fetor emitted from such fruitful sources of it. The sloughs separated, and this extensive ulceration soon assumed a healthy appearance. This patient recovered contrary to the expectation of all his friends.

The carbonate of lime is the best application to erysipelatous inflammation that I

have ever used. Its efficacy in this disease, and the manner in which it should be used, may be seen in Mrs. S——'s *case* 9.

By injecting it into the ears of children, from which there has issued an offensive discharge, the smell has been destroyed and the disease frequently cured.

Of the effects of the carbonate of magnesia, I can say nothing, in cases of this nature, as I have found the two which I have mentioned, answer every intention.

I have known the inhalation of carbonic acid gas, when diluted with atmospheric air, correct the offensive odour of matter discharged from the lungs, in cases of consumption and abscess.

The successful termination of the cases which have been mentioned, are trophies of the utility of the three carbonates which I have mentioned. Their *modus operandi* cannot be difficult of explanation. The affinity of

lime, magnesia, and potash, for the septic acid is decidedly greater than that which subsists between them and the carbonic, consequently the carbonates will be decomposed, and septates of lime, &c. formed, while the carbonic acid will be let loose in torrents from it's combinations.

We now proceed to the fulfilment of the 2nd indication proposed, which is the putting a stop to that process going on in the primæ viæ, by which the oxygenated septon is evolved.....This process is putrefaction. As heat, moisture, and air, are essential to the putrefaction of animal and vegetable matter, the exclusion of them would be an effectual method of preventing their decomposition; but in the bowels this cannot be effected. The experiments of M'Bride,* Henry,† and Dobson,‡ are convincing, that the carbonic acid gas is possessed of this property. Putrid meat was deprived of its offensive smell, and that process by which it was generated,

* M'Bride's Experiments.

† Henry's Experiments and Observations.

‡ Dobson's Commentary on *fixed air*.

checked, by being kept but a short time in this gas.

The manner in which it does this, is a question of acknowledged difficulty, about which chemists have come to no determination. The fact however is so obvious and so generally known, that it will be unnecessary to adduce any experiments in proof of it.

The Experiments of Sir John Pringle,* and Mr. Henry,† lead to the conclusion that the carbonates of lime, and magnesia promote putrefaction in defunct animal matter. As this circumstance might induce many to use great caution, in their exhibition, or forbid them totally in those diseases which are called putrid, it becomes necessary to say something on this subject.

I do not mean to call in question the correctness of the experiments of these gentlemen. I only wish it to be remembered, that

* Diseases of the Army.

† Henry's Experiments and Observations.

one of them has proven the preservative powers of carbonic acid gas, which is one of the component parts of the crab's claws, chalk, and uncalcined magnesia, which they both have said to be promotive of putridity; neither is it to be forgotten that these substances in their uncombined state, possess considerable antiseptic properties. These facts being admitted, it follows that, if by any cause, the union which subsists between the component parts of either of these substances is dissolved, we have in one, the virtues of a powerful antiseptic, and in the other, at least not a promoter of putrefaction. I have elsewhere said, that most of those diseases which arise from animal putrefaction, either in, or out of the body, are produced by an acid. This is the substance which will decompose the carbonates and render them antiseptic. This is the substance which probably existed with mischievous intentions in all those diseases in which the carbonates of lime, magnesia, and potash have been recommended. But it is not always the mischievous product of putrefaction; for sometimes it does not arrive to that degree of oxygenation which is

necessary to constitute an acid. This variety of strength in the product is not occasioned by the tardiness, or rapidity with which putrefaction goes on, but is owing to the presence or absence of those circumstances which favour or retard the union of oxygene with septon. Hence the reason why, the carbonates will not prevent animal matter from putrefying, nor always stop that process after it has commenced. In the first case, there is no acid present; in the latter there is none formed; consequently there will not be disengaged any of the fixed air, which is the only preservative principle in these compounds worthy of notice.

A quantity of the ley of wood-ashes, and another of carbonate of lime, dissolved in water, were put into two separate barrels of very putrid herrings; after standing for 12 hours the putrid stench was the same. Vinegar was now added to each, in such quantity as not to supersaturate the alkali. In 12 hours there was no offensive effluvium emitted and they were actually brought to the table for use. In this case the process of

putrefaction would have gone on. The carbonates possessed no antiseptic property, and there was no acid generated to disengage the fixed air.

The two following cases, will shew the necessity of sometimes administering an acid to effect a similar result in the contents of the primæ viæ ; at the same time they inform us, that dangerous diseases do sometimes arise from septon, oxyded in a degree too low to constitute an acid, and consequently inefficient to discharge the fixed air of the carbonates, administered for their removal, which alone can prevent it's further generation and put a stop to the disease which it produces.

CASE XV.

Mr. H—— A——'s child was taken with cholera to a very violent degree. Absorbents, alkalis, and anodynes were administered for two days without effect. The carbonate of lime was now given in large quantity, and half an hour after each dose, a draught of lemonade was given. This in 12 hours stop-

ped the disease and the child quickly recovered.

CASE XVI.

Mrs. —— was attacked with a profuse diarrhœa, which resisted for a long time the alkalis, absorbents, anodynes, and astringents. The stools were very offensive. The carbonate of lime was administered in large doses, followed in half an hour by a draught of vinegar and water. This checked the disease in twenty-four hours.

There are numerous cases, wherein yeast and fixed air, taken into the stomach, and injected into the bowels, have cured diseases of great violence, and I have not the least doubt, by stopping that process from which their cause proceeded. But the carbonates of lime, magnesia, and potash, may in most cases be exhibited with much better prospect of success, for their operation is two-fold. The morbid acid meeting with the carbonates, is rendered harmless by uniting with their base, and disengaging the carbonic acid gas which they contained; and this in some

way not known, stops that process to which the septic product owes it's birth.

If the limits usually allotted to essays of this kind, or the time allowed for their preparation had admitted of it, much more might have been said corroborative of the principles and practice which have been delivered. The importance, which, I believe, belongs to them, from their having been the means in my hands, of preserving the lives of many, who, I have no doubt, would have died under the usual plan of treatment, and the ascendency which bilious diseases are gaining in our country, have given me confidence enough to face the verbal critic, as well as the philosopher who looks deeper into the subject. I do not think it necessary to offer any apology for the incorrectness of the style, or the order of arrangement. I have solely aimed at being understood, conscious of the deficiency in other respects, and if this object have been gained, the summit of my expectations will be consummated.

FINIS.